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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/779,373
Filing Date: February 17, 2004
Appellant(s): SCHAEPKENS ET AL.

Mark C. Comtois
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed July 27, 2009 appealing from the Office action mailed December 10, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1, 4-8 and 11-15

Claims 16-26 are withdrawn from consideration as not directed to the elected invention.

Claims 2, 3, 9, and 10 have been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,836,070	CHUNG et al	12-2004
5,643,638	OTTO et al	07-1997
6,5763,51	SILVERNAIL et al	06-2003

9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 4, 6-8, 11, 13, and 14 stand rejected under 35 USC 103(a) as being unpatentable over Chung et al (US 6,836,070) in view of Otto et al (US 5,643,638).

Chung teaches an electro-luminescent display with a substrate comprising an anode, and a cathode, and a barrier layer protective layer. A transparent sealing structure is glued to the top of the substrate wherein the transparent sealing structure has an adhesive layer glued to the protection layer, a plurality of organic resin layers

formed on the adhesion layer, a plurality of inorganic barrier layers disposed between the organic resin layers, a flexible polymer film formed on the organic resin layer, and a hard coat formed on the flexible polymer layer (abstract). Herein the flexible polymer layer and the substrate are understood to read on the claimed "first" and "second" polymeric substrate layers. The organic layers are herein understood to read on the claimed organic polymer materials. The inorganic barrier layers are herein understood to read on the claimed inorganic material and may comprise metal oxides or nitrides (col 3, lines 39+).

Chung does not teach that the composition of the organic and in organic layers should vary substantially continuously across the thickness of the composite. However, Otto teaches a method of producing a gradient layer (abstract) comprising organic and metal materials (col 4, lines 22+). Said coatings allows the user to vary the characteristics of the coating, better adherence and hardness (col 1, lines 18+) and which can be produced quickly (col 2, lines 33+). Thus, it would have been obvious to the skilled artisan at the time the invention was made to utilize the method taught in Otto to make the alternating organic/barrier layers taught in Chung. The motivation for doing so would have been to improve adhesion, reducing processing times, and allow for better control over the film's characteristics.

Claims 1, 4-8, and 11-14 stand rejected under 35 USC 103(a) as being unpatentable over Graff et al (US 6,492,026) in view of Otto et al (US 5,643,638).

Graff teaches a high temperature substrate comprising at least one barrier stack adjacent to the polymer substrate (abstract). The substrate may be coated with additional layers such as scratch resistant layers (col 2, lines 64+) or electrically conductive layers (col 5, lines 1+). There is optionally a second substrate applied to the barrier stack on the side opposite the first substrate layer (col 4, lines 57+). The barrier stack comprises barrier layers and polymer layers (col 3, lines 57+). The barrier layers may comprise metal oxides, oxynitrides, nitrides, and the like (col 6, lines 1+). Said alternating layers of polymers and barrier layers are herein understood to read on the "diffusion inhibiting barriers." The polymer layers are acrylate polymers (claim 10). Said barrier may be utilized with LEDS, LEPs, ED, LCDs and the like (col 2, lines 3+). When utilized, said devices are disposed between a pair of electrodes.

Graff does not teach that the composition of the organic and in organic layers should vary substantially continuously across the thickness of the composite. However, Otto teaches a method of producing a gradient layer (abstract) comprising organic and metal materials (col 4, lines 22+). Said coatings allows the user to vary the characteristics of the coating, better adherence and hardness (col 1, lines 18+) and which can be produced quickly (col 2, lines 33+). Thus, it would have been obvious to the skilled artisan at the time the invention was made to utilize the method taught in Otto to make the alternating organic/barrier layers taught in Graff. The motivation for doing so would have been to improve adhesion, reducing processing times, and allow for better control over the film's characteristics.

Claims 1, 4-5, 7, 8, and 11-15 stand rejected under 35 USC 103(a) as being unpatentable over Silvernail (US 6,576,351) in view of Otto et al (US 5,643,638).

Silvernail teaches an organic photoelectronic device structure and a method of making the same. The structure comprises a first barrier resin comprising a first composite stack and a second composite layer stack attached to the first composite layer stack (abstract). The composite layer stack comprises a first polymer substrate layer, at least one first planarizing layer and at least one first high-density layer, while the second composite layer stack similarly comprises a second polymer substrate layer, at least one second planarizing layer and at least one second high-density layer (abstract). Preferably, the stacks will comprise two or more planarizing layers and two or more high density layers (col 2, lines 41+). The planarizing layers comprise fluorinated polymers, polyacrylates, and the like. The high density layers comprise metal oxides, nitrides, carbides, and oxynitrides. Said multi-layer barrier stacks are herein understood to read on the "diffusion inhibiting barriers." The substrate layers comprise polyolefin, polyimide, polyethersulphone, and polyester (col 2, lines 53+). The substrates are arranged such that the stacks are between said substrates (col 2, lines 26+).

Silvernail does not teach that the composition of the organic and in organic layers should vary substantially continuously across the thickness of the composite. However, Otto teaches a method of producing a gradient layer (abstract) comprising organic and metal materials (col 4, lines 22+). Said coatings allows the user to vary the characteristics of the coating, better adherence and hardness (col 1, lines 18+) and

which can be produced quickly (col 2, lines 33+). Thus, it would have been obvious to the skilled artisan at the time the invention was made to utilize the method taught in Otto to make the alternating organic/barrier layers taught in Silvernail. The motivation for doing so would have been to improve adhesion, reducing processing times, and allow for better control over the film's characteristics.

(10) Response to Argument

A. The "varies...continuously" feature

During prosecution, Appellant has pointed to Figure 4 of Schaerpkens et al (US Application No 10/065,018), incorporated by reference in the instant application (paragraph 0029), with regard to said limitation (see paragraph 6(c) of the Yan declaration).

Appellant argues that in order to vary continuously, the percentage of organic material in the layer increases substantially continuously across the thickness of the layer with no discontinuities, breaks or irregularities. Said description is understood to exclude embodiments wherein the percentage or organic material in the overall barrier layer increases in a discrete step wise function from one sublayer to the next wherein the concentration of the organic material remains unchanged through the thickness of each sublayer and there is a jump or discontinuity in the composition a the interface between sublayers.

B. Otto does not disclose the "varies...continuously" feature

The claims recite the limitation "diffusion inhibiting barrier comprising a material, the composition of which varies substantially continuously across a thickness thereof." Appellant argues Otto teaches the deposition of individual layers wherein the individual layers have different compositions than either of the adjacent layers. According to Appellant, the deposition method of Otto results in a discontinuous gradient layer comprised of a plurality of sublayers having step wise increases in the percentage of organic concentration between adjacent sublayers.

Appellant seems to be confusing the method of deposition with the characteristics of the final product. Appellant teaches the use of a continuous PECVD method which Appellant argues results in a single barrier layer with no step wise increases in the percentage of organic concentration. In contrast, the gradient layer taught in Otto comprises depositions resulting from multiple power pulses wherein the percentage of organic concentration varies from one pulse to the next. Appellant argues each of these power pulses results in a "sublayer" of a particular thickness wherein the percentage of organic concentration is continuous across the thickness; resulting in a discontinuous, step wise increase between "sublayers." The examiner respectfully disagrees with appellant's conclusion.

The examiner initially notes that Appellant's conclusion is not supported by any evidence. The record is void of any comparative examples made by the process taught in Otto which demonstrates that the gradient layer exhibits step-wise increases in the percentage of organic content. Appellant also fails to present any evidence in the form of a 132 declaration supporting the conclusion that Otto's gradient layer fails to read on

the claimed barrier layer. Furthermore, Appellant argues the difference in deposition methods but fails to explain why such a method inherently results in a materially different product.

Appellant's argument is further held to be non-persuasive because the argument is inconsistent with the explicit teachings of Otto. Specifically, Otto teaches the deposition of a gradient *layer* (see abstract)-not a series of sublayers. The parameters of deposition are controlled so that the desired concentration gradient occurs in the direction of growth of the layer (col 4, lines 1-4). The result is a layer whose composition changes "continuously" (col 5, line 16) in the direction of layer growth. The layer compositions are adjusted "virtually without delay" (co 5, line 44) to obtain said layer whose composition changes "continuously (col 5, line 16)." The conclusion that the composition varies continuously is further supported by Otto's use of the word "gradient" to describe the layer.

Furthermore, Otto teaches that each pulse results in the deposition of a layer which is less than 10 angstroms thick (col 2, line 53). Thus, Otto is teaching a gradient layer wherein the composition of the gradient layer changes every 10angstroms (or less). For the reasons stated above, the rejections are maintained. Since 10 angstroms is on the scale of a single molecule, it seems unclear how the percentage of organic content could change any more "continuously" than what is achieved by the method of Otto.

C. The proposed combination of Chung, Graff, or Silvernail in view of Otto as presented by the Office fails to meet the "varies...continuously" feature

The arguments are not persuasive for the reasons noted in section B above. Specifically, Otto does teach a gradient layer that reads on the "varies....continuously" feature.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Kevin R Kruer/

Primary Examiner, Art Unit 1794

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/Callie E. Shosho/

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/Jennifer Michener/

QAS, TC1700